

Serial No. 10/824,497

Attorney Docket No. 01-617

REMARKS

The applicants note with appreciation the acknowledgement of the claim for priority under section 119 and the notice that all of the certified copies of the priority documents have been received.

The applicants acknowledge and appreciate receiving initialed copies of the forms PTO-1449 that were filed on 15 April 2004 and 5 May 2005, respectively.

Claims 1-7 are pending. The applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

Claims 1-3 and 5-7 were rejected under 35 USC 103(a) as being unpatentable over Tanimoto et al. in view of Tischler. The applicants respectfully request that this rejection be withdrawn for the following reasons.

Claim 1 covers the novel embodiment disclosed on page 8, lines 22-25, in which the substrate is subjected to a heat treatment so that the metal film (nickel 24') at the portion exposed by the contact hole C on the surface of the substrate 10 becomes an alloy layer of the metal film (nickel 24') and SiC. As shown in Fig. 5A, the metal film formed on the insulating film 22 is removed by being dissolved by an etching liquid.

The patent to Tanimoto et al. discloses a method for manufacturing a silicon carbide semiconductor device in which a field insulating film 3 is formed on the epitaxial layer 2 of the substrate (col. 11, lines 29-32). A gate window 6 is then formed in the field insulating film 3 (col. 12, lines 18-19) and gate insulating film 7 is formed on the front surface of the epitaxial layer 2 corresponding to the lower surface of the gate window (col. 12, lines 53-54). A gate

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electrode 8 of polycrystalline silicon is formed over the substrate surface including the gate window (col. 13, lines 33-34). In subsequent rear contact thermal annealing steps, Ni film on the rear surface electrode is alloyed with the substrate (col. 14, lines 33-34). However, the patent to Tanimoto et al. fails to disclose thermal annealing (or any heat treatment) to make the gate electrode 8 chemically combine with the SiC substrate. In addition, this particular gate electrode 8 is not at the contact hole of the substrate or even exposed to the substrate as a result of the gate insulating film 7. Finally, as stated as the examiner, the patent to Tanimoto et al. also fails to disclose removing the metal film formed on the insulating film with an etching liquid for dissolving the metal.

The examiner has cited the patent to Tischler for disclosing removal of a metal film formed on an insulating film with an etching liquid for dissolving the metal.

The patent to Tischler discloses a method for manufacturing a silicon carbide semiconductor device in which a SiC contact layer 22 and a sacrificial silicon layer 23 are successively formed on a SiC substrate 21. A metal layer 25 is formed over the patterned surface. The sample is then annealed and a silicide 26 is formed where the metal is in contact with the silicon layer. The remaining metal is removed as shown in Fig. 2D.

However, the patent to Tischler fails to disclose that the substrate 21 is subjected to a heat treatment so that the metal layer 25 at the contact hole C on the surface of the substrate 10 becomes an alloy layer of the metal film 25 and the substrate 22, as claimed. Rather, the patent to Tischler discloses that the metal layer 25 becomes an alloy with the sacrificial silicon layer 23. Therefore, even if the patent to Tischler is combined with the patent to Tanimoto et al. the terms of claim 1 are not satisfied by the resulting combination, and this rejection should be withdrawn.


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In view of the foregoing, the applicants respectfully submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

Please charge any unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,


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